

REMARKS

Favorable reconsideration of this application in light of the above amendments and the following remarks is respectfully requested. Claims 1-6 are pending in this application. Claim 3 is amended herein. No claims are allowed.

Claim 3 is amended to secure proper correspondence with paragraph 0032.

Claim Rejections – 35 U.S.C. § 103(a)

Claims 1-6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuse et al (U.S. Patent No. 6,454,909; hereinafter “Matsuse”) in view of Jevtic (U.S. Patent No. 5,928,389).

The Examiner reads Matsuse onto applicant’s claim 1 and concludes that Matsuse fails to teach clause 3 thereof. Clause 3 provides for “processing within the multi-chamber fabrication tool a substrate while employing at least one fabrication process which may be undertaken within more than one chamber, wherein a chamber within which is processed the substrate while employing the at least one fabrication process which may be undertaken within more than one chamber is selected such as to optimize utilization of the multi-chamber fabrication tool.” (emphasis added)

To provide the claim 1, clause 3 limitations absent within Matsuse, the Examiner relies upon Jevtic. The Examiner cites Jevtic at col. 2, lines 51-65 and col. 14, lines 41-49, and asserts that the same teaches a method for efficiently scheduling processing capacity within a multi-chamber processing tool such as to provide improved throughput and utilization.

The Examiner further rationalizes suggestion or motivation for modification or combination of Matsuse’s multi-chamber fabrication tool with Jevtic’s optimization method,

such as to provide the multi-chamber processing tool with improved throughput and utilization, as taught by Jevtic.

In response, applicant first appreciates the Examiner's analysis of Matsuse and the Examiner's assertion that the limitations of applicant's claim 1, clause 3 are absent within Matsuse. However, applicant also respectfully disagrees with the Examiner's reading of Matsuse insofar as the Examiner asserts that the limitations of applicant's claim 1, clause 2 are taught within Matsuse.

Rather, applicant notes that applicant's claim 1, clause 2 provides for "defining for each chamber within the series of chambers a minimum of one fabrication process to provide a series of fabrication processes corresponding with the series of chambers, wherein at least one fabrication process may be undertaken within more than one chamber and at least one chamber has defined therein more than one fabrication process including the at least one fabrication process which may be undertaken within more than one chamber;" (emphasis added). The Examiner cites Matsuse in particular at col. 9, lines 1-31 for teaching the above limitations within applicant's claim 1, clause 2.

In a first instance applicant's claim 1, clause 2 claims a multi-chamber fabrication tool having: (1) a least one fabrication process undertaken within more than one chamber; and (2) at least one chamber having more than one fabrication process including the at least one fabrication process undertaken within more than one chamber.

For comparison purposes, Matsuse (abstract) teaches an etchback method for forming a semiconductor product. An underlying barrier layer film is formed upon a semiconductor substrate. A smaller dimensioned tungsten main layer film is formed upon the underlying barrier layer. Exposed portions of the underlying barrier layer film are etched back while employing the smaller dimensioned tungsten main layer film as a mask. Matsuse at col. 9,

lines 1-31 teaches that “although[] the formation of the main film and the etching of the undesired portion of the underlying film are made in the same processing chamber, these treatments may be made[] using different processing chambers.” To provide the different processing chambers, Matsuse further describes a multi-chamber apparatus wherein may be practiced Matsuse’s invention. The multi-chamber apparatus has “the first chamber 10a , , , to form the barrier metal film, and the second and third chambers 10b, 10c [are] the [main] film forming/etching chambers.”

Thus, Matsuse teaches two separate embodiments of an apparatus that may be employed to practice Matsuse’s invention. In a first embodiment, barrier film deposition, main film deposition and selective etchback (or at least the latter two processes) may all presumably be undertaken in a single chamber, presumably within a single chamber reactor tool. In a second embodiment, barrier film deposition, main film deposition and selective etchback are undertaken in separate chambers within a multi-chamber reactor tool. Nowhere does Matsuse apparently teach a multi-chamber reactor tool wherein: (1) at least one fabrication process may be undertaken within more than one chamber; and (2) at least one chamber has defined therein more than one fabrication process including the at least one fabrication process which may be undertaken within more than one chamber, as is required within applicant’s claim 1, clause 2. Rather, with respect to a multi-chamber fabrication tool Matsuse apparently teaches only a single process undertaken within each reactor chamber.

The fabrication process/reactor chamber limitations of applicant’s claim 1, clause 2 with respect to a multi-chamber reactor tool are also not taught within Jevtic. Jevtic at col. 1, lines 15-50 teaches various aspects of a multi-chamber reactor tool within which may be practiced Jevtic’s inventive scheduling optimization method. Jevtic teaches that “[e]ach chamber [of four processing chambers 104, 106, 108 and 110] represents a different phase or a stage of a semiconductor wafer processing.” Thus, clearly Jevtic also does not teach a multi-chamber reactor tool with: (1) at least one fabrication process may be undertaken within more than one

chamber; and (2) at least one chamber has defined therein more than one fabrication process including the at least one fabrication process. Rather, Jevtic also teaches a multi-chamber reactor tool having only one process dedicated for each chamber.

Thus each and every limitation (i.e., in particular fabrication process/reactor chamber limitations) within applicant's invention as disclosed and claimed within claim 1, clause 2 is not taught within Matsuse or Jevtic, either individually or as combined by the Examiner. For this reason applicant asserts that claim 1 may not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuse in view of Jevtic.

Since all remaining claims within the foregoing rejection are dependent upon claim 1 and carry all of the limitations of claim 1, applicant additionally asserts that those remaining claims may also not properly be rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsuse in view of Jevtic.

In light of the foregoing response, applicant respectfully requests that the Examiner's rejections of claims 1-11 under 35 U.S.C. § 103(a) as being unpatentable over Matsuse in view of Jevtic be withdrawn.

Other Considerations

Applicant acknowledges the additional prior art of record cited by the Examiner on PTO Form 892 but not employed in rejecting applicant's claims to applicant's invention. No fee is due as a result of this amendment and response.

SUMMARY

Applicant's invention as disclosed and claimed within claim 1 is directed towards a method for operating a multi-chamber fabrication tool. The method provides for optimizing tool utilization within a multi-chamber fabrication tool having: (1) at least one fabrication

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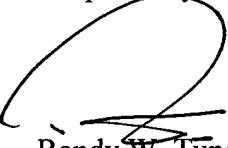
process that may be undertaken within more than one chamber; and (2) at least one chamber that has defined therein more than one fabrication process including the at least one fabrication process which may be undertaken within more than one chamber. Each and every limitation within applicant's invention is not taught by the applied prior art, either individually or as combined by the Examiner.

CONCLUSION

On the basis of the above remarks, favorable reconsideration of this application, and its early allowance, are respectfully requested.

Any inquiries relating to this or previous communications pertaining to this application may be directed towards the undersigned attorney at 248-540-4040, at the Examiner's convenience.

Respectfully submitted,



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